Car Lab: Ramp it Up!

Use a toy car, a ramp, and various materials to see how friction affects movement.

Kit contains:

- Toy car
- Chipboard
- 1 piece each of felt, bubble wrap, and grippy mat

You will need: tape.

Optional: ruler or measuring tape and a stopwatch.

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INSTRUCTIONS

(1) Fold the chipboard on the lines to make your ramp. You may want to lean it against something.

(2) Run the car down the ramp and notice how far it goes. If you have a ruler or tape measure, you can measure the distance. If not, you could put a little piece of paper to mark where it stopped. If you have a stopwatch, you can time how long it runs.

(Use the chart on the back to record your data.)

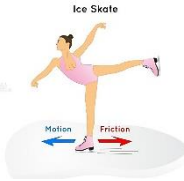
(3) Put one piece of material on the ramp (you may need to tape it in place). Run the car down the ramp again. Measure and/or time the run. Did it change? How much?

(4) Repeat for the two other materials in the kit.

(5) You can test other materials you have at home. Some suggestions are sandpaper, cloth or towel, ribbon, or anything you can imagine!

What's Happening?

Friction is a force that works against motion when two surfaces touch or rub together. Friction stops or slows down motion. Some surfaces cause more friction than others. Rubber has a lot of friction, which is why tires and the bottom of gym shoes are made from it. Ice has hardly any friction, which is why it's slippery!



Which surface that you tested had the most friction? (**Hint**: it made the car go the slowest/ shortest distance.)

When would engineers want to reduce friction?

When would they want to increase it?

Material	**Distance**	**Time**
Nothing		
Felt		
Bubble Wrap		
Grippy Mat		

Books and Resources

- *Forces Make Things Move* by Kimberly Bradley
- *All About Forces* by Angela Royston
- *Pushes and Pulls* by Anna Claybourne
- SciShow Kids: https://www.youtube.com/watch?v=Ps90zArJEJY